inter se, and the association of some of these differences with differing seasons and climates. Many large additions exhibiting striking variations of these kinds are recorded in the descriptions given of collections of butterflies received from South Africa, so wonderfully rich in these varied forms, as well as from New Zealand, the islands of the Indian Ocean, and elsewhere.

Special arrangements made at the museum for the study and illustration of mimicry in various orders of insects are described. All the orders receive attention and study there, and with such an affluence of contributors from all parts of the world, with the aid of the numerous willing and capable helpers to whom Prof. Poulton heartily acknowledges the obligations that science owes them, and with the enthusiastic and intelligent interest in the subjects that manifestly prevails in every department of the institution, the Hope Museum is plainly pursuing a career that is rendering it of great and increasing scientific value. F. M.

OUR BOOK SHELF.

Insect Pests of the Farm and Garden. By F. Martin-Duncan. Pp. vii + 143; illustrated. (London: Swan Sonnenschein and Co., Ltd.) Price 2*s.* 6*d.* net.

THIS little book appears in the Naturalists' Library Series. It deals with a number of common insects that are destructive in the field and garden, and at least one *rare* one. The printing and illustrations are good on the whole, and it is clearly and interestingly written. There are, of course, printer's errors, such as Br*a*chus for Bruchus, Ce*n*torhynchus for Ceutorhynchus, ov*ae* for ova, &c. A few illustrations are scarcely recognisable, such as that of the codling moth (Fig. 38), the currant gall mite, and the gooseberry red spider (the currant mite, evidently copied from the Board of Agriculture leaflet, being particularly poor, and quite unlike the actual acarus).

When one reads the part dealing with treatment the impression is at once formed that the author is not only not practically acquainted with the subject, but is not *au fait* with any up-to-date work. No mention is made of the most important insecticides, &c., such as arsenate of lead, which is superseding Paris green, caustic alkali wash, bisulphide of carbon, &c., whilst many of the receipts given are quite out of date.

Such advice as picking up maggotty apples, the cleaning of hop poles, and burning the bine, &c., will scarcely meet with the approval of farmers, and is certainly not necessary. One does not now see many hop-poles about to clean. Nothing up to date is given concerning wireworm, whilst, on the other hand, people are cautioned against having animals and fowls in orchards sprayed with Paris green; the author evidently knows nothing of the experiments carried out which show that we can safely keep stock of all kinds in the orchards even when they are actually being sprayed.

Some of the scientific names used are wrong; that of the celery fly is not *Tephritis onopordinis*; the names of the diamond-back moth and the red spider of hops are also wrong.

The work has evidently not been compiled from sufficiently up-to-date material to recommend it to the notice of practical men, and there is nothing new in it of scientific value.

Elementary Electrical Engineering in Theory and Practice. By J. H. Alexander. Pp. xii + 208. (London: Crosby Lockwood and Son, 1906.)

IT is difficult to find much in this book to recommend. It is evidently not intended for the higher classes of students or engineers, but this fact is scarcely sufficient to warrant an entire absence of logical sequence or method in the arrangement of the material. The scope of the book is far too wide, taking in as it does fundamental principles, measuring instruments, electrical machinery, batteries, cables, transmission, and generating stations.

Such a wide range compressed into two hundred pages must inevitably lead to a superficial grasp of the subject. For instance, what can be the utility of such a paragraph as the following?

"Storage cells are always fixed up in a separate room. Brickwork or stone, laid in cement and concrete, are used for the foundations for the machinery. The coal bunkers should allow of a store of coal supply for three or four weeks."

The author would be well advised to concentrate his attention on one of the sections mentioned above instead of attempting to include in a single volume so much that cannot adequately be treated in so small a space.

Immanuel Kants Grundlegung zur Metaphysik der Sitten. Dritte Auflage. Edited by Karl Vorländer. Pp. xxx + 102. (Leipzig: Verlag der Dürr'schen Buchhandlung, 1906.) Price 1.40 marks.

THIS is the third edition of one of Kant's best-known works in the excellent series of the Philosophische Bibliothek. The introduction contains a well-informed account of Kant's occupation with ethical subjects between the years 1764 and 1785, and of the interest excited by the publication of the "Grundlegung." The text is based on the best authorities, and variant readings are added in the footnotes. A full index of names and subjects completes the volume.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

The Mixed Transformation of Lagrange's Equations.

RETURNING to Padua after a month's absence, I read in NATURE of August 2 (p. 317) a letter by Mr. A. B. Basset on "The Mixed Transformation of Lagrange's Equations."

The letter begins:—"I should fancy from the review by 'G. H. B.' in NATURE of July 19 (p. 265) that the papers of Prof. Levi-Civita relate largely to the *mixed* transformation of Lagrange's equations, the complete theory (Proc. Camb. Phil. Soc., vol. vi., p. 117; 'Hydrodynamics,' vol. i., p. 171) of which was first given by myself so far back as 1887"; it is then shown that the *mixed* form of Lagrange's equations may be obtained in the most simple way through an elegant artifice of elimination.

The words here quoted give the impression that my papers deal principally with the announced theory, and that they may be little more than the reproduction of some previous papers by Mr. Basset. I wish, however, the readers of NATURE to know—and Mr. Basset will be the first to recognise the fact—that the case is quite different. The papers in question (as it appears from the general title, "Sur la Recherche de Solutions particulières des Systèmes différentiels et sur les Mouvements stationnaires," and as it seems to me to result also from the review by

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"G. H. B.") are essentially dedicated to the *effective research* of particular solutions of dynamical equations. Not a word is said of transformations, *mixed* forms, &c., and ignoration of coordinates is mentioned only in the preface, because this was Routh's point of view in defining and studying the stationary motions.

T. Levi-Civita.

University of Padua, August 29.

I do not recollect by whom the phrases "ignoration of coordinates" and "ignored coordinates" were originally introduced, but on consideration I am of opinion that they are singularly inappropriate ones, and I much prefer the phrase "kinosthenic coordinates."

The advantages of the mixed transformation are that, whenever a generalised momentum is known to be constant the motion can be determined without knowing anything about the coordinate or the velocity corresponding to this momentum. The first trace I can find of this idea is contained in a paper published by Lord Kelvin about 1872 (see "Hydrodynamics," vol. i., p. 177).

The discovery of the mixed transformation was the result of certain hydrodynamical investigations relating to cyclic irrotational motion, but the circumstance that I originally published it in a hydrodynamical form may have obscured the character of the result as a general theorem of dynamics.

A. B. Basset.

September 4.

The alleged Triassic Foraminifera of Chellaston, near Derby.

In Nature for July 26, in a notice of Mr. Fox-Strangway's memoir on the Loughborough district, reference is made to certain Foraminifera of Liassic type, at one time believed to come from the local Trias. Prof. Rupert Jones, F.R.S., has kindly directed my attention to his explanation of the matter in the "Foraminifera of the Crag," part ii., p. 161, published by the Palæontographical Society in 1895. He there gives a history of the observations, including personal inquiries, and believes that the Foraminifera in question came from Liassic clay in Leicestershire, which was "inadvertently thrown in with the 'red clay' on its journey to Cubitt's works in London." Mr. Fox-Strangways gives a reference to this passage, but does not quote it, and suggests on his own part that the Foraminifera may have come from Liassic material in the drift.

Grenville A. J. Cole.

White- and Brown-shelled Eggs.

Birds which lay their eggs in comparatively unprotected places and in a hollow in the ground, as is the case with the pheasant, partridge, jungle fowl, &c., always lay coloured eggs closely resembling in tint the colouring of their surroundings. White-shelled eggs are laid only by birds which make a good nest—those which make it in a secluded spot, or which take the precaution of covering their eggs with leaves, &c., when they are off the nest. It is a strange fact, therefore, that the non-sitting breeds of our domestic fowls lay white-shelled eggs, whereas in the eggs of the sitting or Asiatic breeds the protective colouring is retained in the shell of the egg. This loss of colour cannot be merely the result of centuries of domestication, or all breeds of domestic fowls would lay white-shelled eggs. The systematic repression of the maternal instincts of the hen carried on by man for a number of years has certainly produced the white-shelled egg. It would almost appear to be the case that the hen, knowing she will have nothing to do with the hatching and rearing of the chicken in the egg, loses all interest in the egg, and leaves it, as it were, to its fate. For this reason she neglects in some mysterious way to impart to the shell the protective colouring which is so necessary, in a state of nature, for the preservation of her race. If this be really the case there is an insurmountable obstacle in the way of obtaining brown eggs from the non-sitting breeds of domestic hens, and poultry keepers are only wasting time in trying to accomplish the impossible.

L. M. F.

FLASHLIGHT PHOTOGRAPHS OF WILD ANIMALS.

From the popularity of his well-known work "Mit Blitzlicht und Büchse" (or its English translation, "With Flashlight and Rifle"), there is, we believe, a very general impression that Mr. C. G. Schillings was the pioneer in the practice of photographing big game animals by night in their native haunts by combining the use of the flashlight with the camera. It appears, however, from a most interesting and profusely illustrated article in the July number of the *National Geographic Magazine* that the true claimant to this position is an American sportsman, the Hon. George Shiras. With regard to his position in the matter of flashlight-photography, Mr. Shiras writes as follows:—

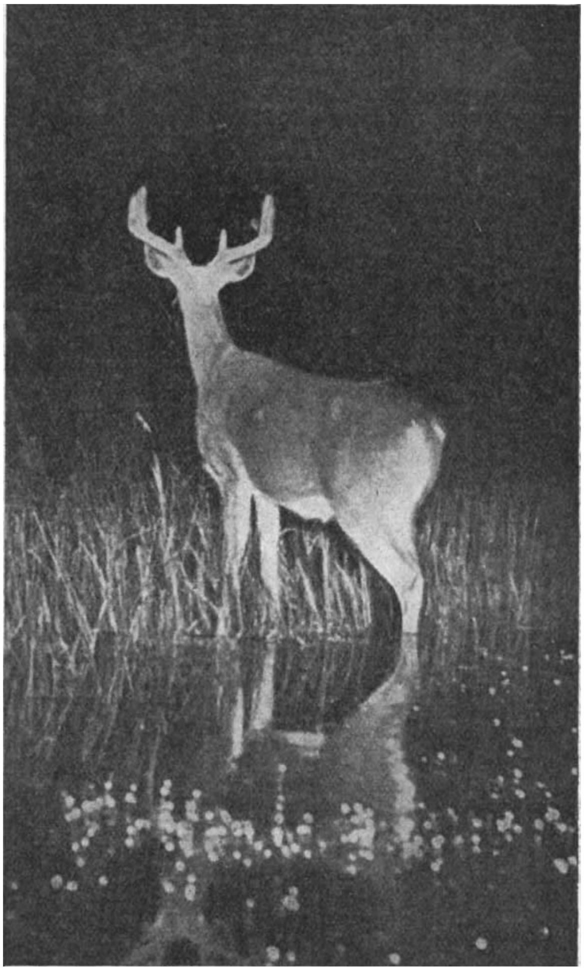

Fig. 1.—A White-tailed Deer watching a light on bushes in the distance. From the *National Geographic Magazine*.

"While a number of the present illustrations were taken in the daytime, this method of photography is now so well known that I will not attempt to describe such pictures in detail; but in view of the fact that I was the first to attempt flashlight pictures of wild game, and for the first fifteen years was the sole occupant of this attractive field of photography, it may be of interest to the readers of this article to learn something about this rather odd way of picturing wild animals."

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